

REMARKS

Claims 1-21 and 40-58 are pending in the application with claims 51 and 52 amended herein and new claims 55-58 added herein.

Claims 1-21 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Suntola in combination with Yu. Applicants request reconsideration.

Applicants herein reiterate and incorporate by reference the previous remarks in the Response to September 12, 2002 Office Action. In such previous Response, the Applicants amended nearly all claims and added new claims setting forth limitations and combinations of limitations not previously considered by the Office. The Office should appreciate the need to reevaluate the combination of cited references in light of the previous amendments to the claims. Simply looking in such references or others for the changed or added limitations is not sufficient. Such reevaluation is required because the prior art must suggest to those of ordinary skill in the art, "that they should make the claimed composition or device, or carry out the claimed process." In re Vaeck, 947 F.2d 488, 20 USPQ 2d 1438, 1442 (Fed. Cir. 1991) (emphasis added).

Further, the text of 35 U.S.C. § 103(a) requires that "the subject matter as a whole" must be obvious rather than select elements. Applicants assert that, with the previous claim amendment, the subject matter of the claims was transformed such that if a suggestion or motivation to combine the cited references previously existed, then it did not after the amendment. The mere fact that the prior art can be modified does not make the modification obvious "unless the prior art suggested the desirability of the modification." In re Gordon, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984). "When *prima facie* obviousness is established and evidence is submitted in rebuttal, the decision-maker must start over . . . An earlier decision should not . . . be considered as set in concrete, and

applicant's rebuttal evidence then be evaluated only on its knockdown ability." In re Rinehart, 531 F.2d 1048, 1052, 189 USPQ 143, 147 (C.C.P.A. 1976) (emphasis added).

Regarding claim 1, Applicants previously asserted that neither Suntola nor Yu disclose or suggest an interface layer containing at least one monolayer of a first metal intermixed with a second metal different from the first metal where the interface layer is chemisorbed on a first layer containing the first metal and a second layer containing the second metal is formed on the interface layer. Page 4 of the Office Action replies that Suntola teaches forming atomic layers for almost the entire Periodic Table and those of ordinary skill would have a reasonable expectation of achieving success.

However, such statement overlooks the fact that Suntola does not disclose or suggest the claimed interface between the claimed first and second layers. Because Suntola fails to disclose or suggest the combination of features, it is improper for the Office to allege that Suntola can somehow reveal a reasonable expectation of success in forming the intermixed monolayer between the first layer containing the first metal and the second layer containing the second metal. Yu also does not disclose or suggest the subject matter of claim 1 since, as previously asserted by the Applicants, Yu depends upon the physical and chemical properties of underlying silicon and the reaction thermodynamics between silicon, alkaline-earth-metal, and oxygen to form the structure described therein. Yu does not describe any process modifications that might be affected to adapt Yu's interface 14 to some other surface.

Accordingly, neither Suntola nor Yu disclose or suggest the claimed method. Since both references are similarly deficient, combination of the references cannot be considered to disclose or suggest the missing limitations. Applicants assert that the Office has merely looked for a teaching of forming metal containing atomic layers and assumed that such additional teaching discloses the subject matter of claim 1. Accordingly, the Office has not

"started over" in evaluating Applicants' evidence submitted in rebuttal of *prima facie* obviousness and considered the subject matter as a whole rather than select limitations. At least for such reason, claim 1 is patentable over Suntola considered alone or in combination with Yu. As may be appreciated from the discussion above regarding the deficiencies of the cited art as applied to claim 1 and from Applicants' previous Response, claims 2-21 are also patentable.

Claim 46 newly presented in the previous Response set forth, in pertinent part, an interface layer containing a first chemical element intermixed with a second chemical element different from the first chemical element to provide a composition gradient across a thickness of the interface layer. The interface layer is between a first layer containing the first chemical element and a second layer containing the second chemical element. Page 4 of the Office Action acknowledges that Suntola does not disclose the claimed interface layer but takes the position that gradient layers between successive coating layers is well known in the art. Further, the Office relies upon Yu as allegedly teaching an interface layer between a substrate and a layer.

Even so, Applicants assert that neither Suntola nor Yu considered alone or in combination disclose or suggest every limitation of claim 46. Neither reference discloses or suggests the claimed providing of a composition gradient across a thickness of the interface layer. The Office merely asserts that gradient layers are known in the art. Such a finding by the Office again constitutes a failure to consider whether the subject matter as a whole is obvious, rather than select limitations of claim 46. Applicants assert that consideration of the whole subject matter was required prior to final rejection of claim 46.

In addition, the extent of rebuttal to Applicants' assertions is a general statement that certain features are well known in the art. Rejection is thus based on methods within the personal knowledge of the Examiner. As allowed by 37 CFR 1.104(d)(2), Applicants

hereby call for support of the rejection by affidavit of the Examiner's personal knowledge or the citation of further art that can be reasonably combined to support the Office's position. Claims 47-54 depend from claim 46 and are patentable at least for such reason as well as for the additional limitations of such claims not disclosed or suggested.

Applicants note that no specific grounds for rejection of claims 40-54 are presented in the detailed action. However, given the discussion on page 4 of the Office Action regarding limitations present only in claims 40-54 and the listing in the Office Action Summary of claims 40-54 as rejected, Applicants assumed that failure to reject claims 40-54 on page 2 of the Office Action was a typographical error.

New claims 55-58 are added herein setting forth a narrowed scope and a combination of limitations not previously considered by the Office. Applicants assert that claims 55-58 are patentable over the cited combination of references. Applicants also assert that a first action final rejection of new claims 55-58 would be improper since the subject matter as whole of claim 55 cannot be rejected merely by reference to previous grounds of rejection.

Applicants assert that adequate reasons are established herein in support of allowability for claims 1-21 and 40-58. Applicants request allowance of all pending claims in the next Office Action.

Respectfully submitted,

Dated: 20 May 2023

By: 
James E. Lake
Reg. No. 44,854